NATIONAL SCIENTIFIC COUNCIL ON ADOLESCENCE

COUNCIL REPORT NO. 2

Engaging, Safe, and Evidence-Based

WHAT SCIENCE TELLS US ABOUT HOW TO PROMOTE POSITIVE DEVELOPMENT AND DECREASE RISK IN ONLINE SPACES FOR EARLY ADOLESCENTS

UCLA Center for the Developing Adolescent

NATIONAL SCIENTIFIC COUNCIL ON ADOLESCENCE

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CONTENTS

EXECUTIVE SUMMARY

Early adolescence—roughly ages 10 to 13—is a key time of exploration, discovery, rapid learning, and social and emotional change. As youth transition from childhood into the early stages of puberty, they develop their self-identities, learn about interpersonal relationships, and navigate novel and complex social contexts.

In today's world, early adolescents are increasingly confronting these developmental milestones in online spaces and benefitting from the new opportunities afforded by these spaces. Digital technology use among early adolescents rises reliably and steadily each year, and this change is particularly pronounced during the transition from childhood into early adolescence. The distinction between young people's online life and "real life" is quickly becoming outdated as social interactions naturally flow between digital and physical worlds.

Many crucial social experiences in early adolescence occur in online environments. At this age, most young people acquire their first smartphone, and mobile devices become a primary form of communication and entertainment. The overlapping transitions into adolescence and into an online world create unique opportunities for positive development, as well as new risks and vulnerabilities.

Currently, the digital technologies that are heavily used by young adolescents are not required to submit to any standardized regulations or oversight. So as young users explore, discover, take risks, and connect with peers in positive ways online, they must also contend with limited control or assurances related to their own safety and privacy. There is a compelling need to develop recommendations and guidance that can ensure that digital technology promotes positive development and limits potential harm.

During the past two decades, developmental scientists have begun to develop an understanding of how young people are using digital technologies and the impact that doing so has on them. We often see large gaps between what parents, educators, and young people believe about how online experiences impact well-being and what the research actually shows. We also see discrepancies in the online platforms that adults are familiar with and concerned about versus the ones that young people are actually using the most. As we discuss in this report, it is important to understand both the fears and facts if we are to successfully support youth as they enter and navigate the online world.

We still have much to learn as young people's use of digital platforms evolves, digital technologies change, and new online spaces are introduced. But current research can inform recommendations for early adolescents' use of digital technology moving forward. Experts in early adolescent development can show digital technology companies and policymakers how to apply research findings to ensure that online spaces are accessible, equitable, safe, and supportive of positive development and well-being. We must begin implementing recommendations that shape design, regulation, and policy in ways that help young people thrive and ensure that all young people have safe, equitable access to the opportunities afforded by digital technology, now and in the future.

Overarching Recommendations of This Report

1. Digital technology should scaffold healthy development and promote wellness. Digital platforms can and should promote positive growth for young adolescents by scaffolding healthy learning, entertainment, and emotional, social, physical, and sexual development.
2. Digital technology should have design and use requirements that make it safe for early adolescents. Social media and other digital platforms that are used by large numbers of children and young adolescents should incorporate explicit measures to acknowledge and support these users. Policymakers should introduce regulation and oversight to minimize harm.
3. Digital technology used by young adolescents should incorporate and advance the best available research as part of its design and evaluation process. Digital technology companies and policymakers should require independent evaluation by experts in developmental science, mental health, and other relevant areas for any digital technology platforms that may carry real health concerns for young adolescents. Additional funding for research, communication of best practices for supporting youth in online spaces, and collaboration with parents, youth, educators, clinicians, and youth-serving organizations will allow us to harness the power of digital technology to reach young people, while also ensuring they remain safe.
4. All young adolescents should have reliable access to the level of digital connectivity and devices required to fully participate in their education and learning. Digital technology companies should center equity, accessibility, and inclusion when designing products for youth so that young people from a diverse range of communities can benefit from online opportunities to explore, discover, learn, and connect with peers.

INTRODUCTION

Focus on Early Adolescence

Adolescents of all ages use and benefit from personal digital technology—electronic tools, devices, and platforms that generate, store, or process data (for example, social media, online games, multimedia, smartphones, tablets, gaming consoles, and smart speakers). However, how this technology is used and for what purpose varies for young people of different ages. The implications of its use also vary. In early adolescence, the period from roughly ages 10 to 13, children are making two crucial developmental transitions that make them particularly susceptible to both the positive and negative influences of digital technology. They are transitioning into adolescence while simultaneously acquiring smartphones and transitioning to digital technology use that is unsupervised and more focused on social interactions online. The intersection of these transitions means that digital technology offers a crucial space for growth and learning.

Given the importance of these concurrent transitions, our report focuses on early adolescence. We specifically lay out the core aspects of adolescent development during this crucial period in *Table 1: Digital Technology and Early Adolescence*.

THE TRANSITION INTO ADOLESCENCE

During the transition to adolescence, young people experience an acceleration of pubertal and sexual changes, rapid brain development, changes in self-image, increases in family conflict, intensification of peer relationships, and more diversity in the sources of information and social interaction that they seek out (see discussion of core aspects of adolescence under *Recommendation 1: Scaffolding Healthy Development and Promoting Wellness*). Young adolescents are going through an immense period of learning, independently reasoning through complex social situations, exploring new social interactions, and testing adult limits.[1,2] Questions of identity also become central as youth think about who they are and their place in the world. This development of identity subsequently influences attitudes, motivations, and behaviors.[3,2,4]

Early adolescence in particular is a time of profound change when these key milestones of development are happening simultaneously.[5] As they go through these changes, young adolescents are especially sensitive to external social and emotional influences, and compared to older adolescents, they are not as able to regulate their responses to these influences.[1,6,7,8,9,10] The sheer degree of change during this time means that both healthy and potentially harmful influences abound, and supports that promote positive development and limit harm are especially important.[10,11]

THE TRANSITION INTO HEAVIER USE OF DIGITAL TECHNOLOGY

For young adolescents, digital technology becomes a central part of daily life as social lives move more heavily into online spaces. Associations that have been observed between social media and adolescents' social and emotional well-being are typically small and based only on correlational studies.[12,13] Some evidence shows that these correlations, when present, are stronger for girls and during early adolescence.[14] However, the direction of effect is not clear; for example, findings from one study indicate that adolescents' depressive symptoms may be influencing social media use and not the other way around.[15]

Another unique aspect of this age is that while social media use increases dramatically at this time (38 percent of 8- to 12-year-olds use social media), most social media platforms claim to require an age minimum of 13 for all users (see problems with

age-verification under *Recommendation 2: Keeping Early Adolescents Safe*). Because there is no official acknowledgment that people under 13 are using these products, these age groups may not be considered a target audience when companies are making design decisions.

SMARTPHONE ACQUISITION IN EARLY ADOLESCENCE

The period of smartphone acquisition (which also commonly occurs between the ages of 10 and 13) is of particular importance because it creates a new level of unsupervised access to social media and other online spaces that were previously restricted by adults or limited to shared family or school devices. For new smartphone users, opportunities for decision-making skyrocket as youth encounter unprecedented ways to interact online, make their own choices about these interactions, and experience direct positive and negative consequences as a result. This particular time of transition to independent smartphone use creates a space in which development, mental health, and digital technology exposure interact in ways that impact young adolescents' well-being and life trajectories as they transition into their teenage years.

NOTE: *We acknowledge that gaming is also an increasingly social online activity with many options for communication. Gaming is not the focus of this report but it should be considered by parents, educators, and policymakers as part of the growing digital ecosystem in which adolescents are spending their time.*

DIGITAL TECHNOLOGY AS A SPACE FOR EARLY ADOLESCENT LEARNING

Young people are not simply spending more time 'using' digital technology. Rather, digital technology offers a crucial set of tools for development as children transition into adolescence. It becomes an important place where young adolescents learn and explore on a day-to-day basis. Of course, online spaces are places to interact with friends and gather information, but they also allow young adolescents to explore who they are and understand their larger social world. With increasing numbers of early adolescents spending their time and exploring online, we need to understand how to design digital technology in ways that promote healthy development and learning during these years.

Digital Technology Amplifies Both Good and Bad

Digital technology is not inherently good or bad. However, its pervasive use during early adolescence combined with factors such as who is using it and for which activities can amplify both its positive and negative impacts.[12,16] Opportunities for good include new avenues for seeking support, developing identity, social and emotional learning, and gaining acceptance (see a detailed discussion of positive influences in Common Sense Media's 2018 Social Media, Social Life report). Opportunities for harm include sleep disruption and increased exposure to bullying, pornography, unhealthy body images, and harmful targeted advertising.[17,18,19,20] Digital technology use also gives young people a "permanent record." On many platforms, their online postings and activities—both good and bad—are preserved without any explicit consent and with no opportunity for removal (see discussion of the Right to be Forgotten, which promotes the right to remove personal information from the internet).

Digital technology use can amplify benefits and harms in different ways for different users. Young people have unique personalities, interests, and goals and use digital technology in varied ways. These differences can make some individuals more susceptible to the positive and negative impacts of digital technology, while others are affected to a lesser extent. Certain

demographic groups may also be at higher risk for specific harmful influences (for example, young adolescent girls may be particularly influenced by online content promoting unrealistic body types and disordered eating). A 14-year-old reviewer of this report told us that digital technology "definitely adds to the pressure of looking or sounding and acting a certain way… and pushes a societal agenda to be a certain way (mostly social media platforms), especially for girls my age." Rapidly changing advances in digital technology also mean that exposure may vary significantly for different groups of adolescents based on where they happen to be developmentally (such as age 10, age 13, or age 16) when new digital technology platforms and products hit the market and become popular.

Our Proposal

We propose that digital technology be designed and regulated in ways that maximize positive, equitable benefits for all young adolescents and limit potential harm. We propose that changes in digital technology be grounded in evidence from developmental science and consistent with already-established standards for young users of digital technology (see discussion of these standards in the *Rights of Children in Digital Spaces; Recommendation 2*). We also support improving education about the potential benefits and risks of digital technology for youth, parents, product designers, teachers, policymakers, and other stakeholders. Implementing more evidence-based practices will help ensure that digital technology use by early adolescents promotes well-being and positive development, while simultaneously limiting exposure to harm.

We offer the following specific recommendations:

1. Digital technology should scaffold healthy development and promote wellness. Digital platforms can and should promote positive growth for young adolescents by scaffolding healthy learning, entertainment, and emotional, social, physical, and sexual development.
2. Digital technology should have design and use requirements that make it safe for early adolescents. Social media and other digital platforms that are used by large numbers of children and young adolescents should incorporate explicit measures to acknowledge and support these users. Policymakers should introduce regulation and oversight to minimize harm.

DIGITAL TECHNOLOGY AND THE PANDEMIC

In 2020, the COVID-19 pandemic created a unique need and opportunity for early adolescents to use digital technology at very high rates. It was required for early adolescents to "attend" school, and it was often their only way to interact with others outside of their household. During the pandemic, digital technology was an especially important space where development was taking place. It served as a crucial tool for young adolescents to develop the social and emotional skills needed to support identity development, build and strengthen close relationships, and promote other forms of socioemotional development.

Now that restrictions have relaxed, families, educators, and youth service providers are concerned about what will happen next. As digital technology use has become more embedded in daily life, it is even more important to ensure that online spaces continue to offer unique and safe opportunities that support a healthy transition into adolescence.

3. Digital technology used by young adolescents should incorporate and advance the best available research as part of its design and evaluation process. Digital technology companies and policymakers should require independent evaluation by experts in developmental science, mental health, and other relevant areas for any digital technology platforms that may carry real health concerns for young adolescents. Additional funding for research, communication of best practices for supporting youth in online spaces, and collaboration with parents, youth, educators, clinicians, and youth-serving organizations will allow us to harness the power of digital technology to reach young people, while also ensuring they remain safe.

4. All young adolescents should have reliable access to the level of digital connectivity and devices required to fully participate in their education and learning. Digital technology companies should center equity, accessibility, and inclusion when designing products for youth so that young people from a diverse range of communities can benefit from online opportunities to explore, discover, learn, and connect with peers.

In the following sections, we discuss each of these recommendations in detail.

CREATING POSITIVE AND SAFE DIGITAL SPACES

When we create the spaces where youth explore, play, and socialize in the physical world, we take explicit steps to ensure that these spaces are age-appropriate, fun, challenging, and safe. Community parks and pools, summer camps, playgrounds, organized sports fields and equipment, and even more formalized educational spaces like classrooms and science laboratories are all designed intentionally to promote entertainment, exploration, discovery, and learning, while also managing risk. These spaces are designed based on guidelines and best practices devised by experts on development and safety about ways to create engaging environments that provide physical, social, and emotional benefits while also protecting young people from harm.

As children transition into adolescence, they spend their days in both physical and digital environments. They seamlessly use both to connect with friends, seek out entertainment, and learn about themselves and the world. We as a society should expect that the digital spaces in which early adolescents explore, socialize, and learn be regulated just like the physical spaces that we create for youth. Digital technology companies should design online spaces so that young users can socialize and take healthy risks within a safe and reasonably controlled environment. Policymakers should ensure that our young people have high-quality opportunities to thrive and stay safe in all of the spaces where they spend their time.

RECOMMENDATION 1: SCAFFOLDING HEALTHY DEVELOPMENT AND PROMOTING WELLNESS

Digital technology should scaffold healthy development and promote wellness. Digital platforms can and should promote positive growth for young adolescents, by scaffolding healthy learning, entertainment, and emotional, social, physical, and sexual development.

We recommend that digital technology be designed and regulated in ways that amplify benefits for youth. Evidence from developmental science suggests that the following measures can be implemented into current digital technology design and regulation processes to ensure that they promote healthy development and well-being for early adolescents:

- Digital technology should be explicitly designed to enhance core aspects of positive early adolescent development, maximize wellness, and ensure that the benefits of using digital platforms outweigh the risks.
- Designs should be developmentally appropriate and youth-centered. They should not be "kid versions" of applications and platforms that were originally designed and intended for adult use. Youth, parents, and experts in early adolescent development should all be actively involved in the design of digital platforms for young people.

Designs that Support Ongoing Positive Development Processes in Early Adolescence

PROMOTING THE CORE MILESTONES OF EARLY ADOLESCENCE

Developmental scientists have identified many core aspects of positive development that occur in adolescence and during the transition into adolescence (see the *Core Science of Adolescence*) The design, regulation, and use of digital technology should be focused on promoting the positive development of these core developmental milestones. Key concepts of adolescent development include:

- Exploration and risk taking
- Meaning and purpose through contribution
- Decision making and emotional regulation
- Support from parents and other caring adults
- Developing values, goals, and identity
- Respect and social status

Within each of these core areas of adolescent development, specific processes are especially important during the period of early adolescence. Considering these processes can allow us to better understand the nuances of why digital technology has a unique impact for this particular age group. In *Table 1*, we outline key considerations for early adolescents within each of the core concepts of adolescent development. We also highlight the unique opportunities and challenges that digital technology can offer youth during this crucial period.

Digital technology should help early adolescents meet these core milestones. Online spaces should give young adolescents the chance to contribute and gain respect from peers in ways unique to the online environment. Digital spaces should offer young adolescents a safe place to hang out with their friends and form new relationships with peers. Online environments should also allow early adolescents opportunities to build their confidence by making independent choices and engaging in positive risk taking with realistic but manageable consequences. Digital technology platforms should offer unique opportunities for setting goals, developing one's values, and gaining support that may not be readily available to many young people in their offline environments.

TABLE 1: Digital Technology and Early Adolescence

Core Developmental Needs	Considerations for Early Adolescents (Ages 10-13)	Digital Technology Opportunities and Challenges[33]
Exploration & risk-taking	Young adolescents are primed to discover new interests and master increasingly complex skills. Novel opportunities and new social connections offer challenges and can nurture positive development.	OPPORTUNITIES: • New space to identify and support young adolescents' social and emotional needs • Opportunities to explore, create, and connect are available during a sensitive period for social learning • Space for parents and caring adults to scaffold, support, engage, and influence learning and meaning-making CHALLENGES: • Few age-appropriate protections in place, especially on social media sites designed for ages 13+ • Transition to more independent digital tech and social media usage coincides with initial age of onset for some mental health challenges • Increased risk for youth with heightened sensitivity to rejection and previous experiences with victimization • Exposure to hate speech and misinformation while critical analysis skills are still developing
Meaning & purpose through contribution	Pubertal changes activate a youth's motivation to develop and pursue new passions. Opportunities to contribute to family, peers, community, and society support growing needs for agency and autonomy, and offer a space for social learning.	
Decision making & emotional regulation	Self-regulation, judgment, and decision-making abilities continue to strengthen, but practice and support remain necessary to grow these skills further, especially as self-conscious emotions and peer influences become more salient.	
Support from parents & other caring adults	Unconditional adult support is critical even as young adolescents begin to focus on their personal choices and test limits.	
Developing values, goals, & identity	Questions about identity abound: Who am I, separate from my family? How do I fit in with my friends? Who am I attracted to? What am I good at? Young adolescents' developing identities are linked to their attitudes, values, beliefs, motivations, and behaviors.	
Respect & social status	Sensitivity to social and emotional information peaks in early adolescence, and young adolescents increasingly seek affirmation and belonging in peer groups. Effective support from peers help them feel respected and offer opportunities for admiration by those whose opinions they value most.	

For example, online spaces might offer youth unique opportunities for joining a cause that is not mainstream in one's community, developing healthy sexual practices and identity, and/or finding supportive peer communities that don't have a large presence in smaller towns or certain regions of the country (for example, for youth of color, LGBTQ+ youth, or other youth from marginalized groups). Ultimately, digital technology should provide support to help youth meet the core milestones of their transition to adolescence and achieve positive learning and outcomes related to emotional development, interpersonal relationships, and mental, physical, and sexual health.

> *"[Digital technology] helps making a ton of new friends, we usually go to someone's house in the same room and play online... when we play social games it increases our confidence in real life."*
>
> **— 13-YEAR-OLD**

PROMOTING EARLY ADOLESCENT WELLNESS

Digital technology that is commonly accessed by young users should have design features that proactively and intentionally promote youth health and well-being. In addition to supporting positive developmental milestones, digital technology used by young adolescents should include protective features that intentionally promote health and wellness. For example, options to avoid sleep disruptions, time limits on particular applications (perhaps depending on the educational or wellness value of the app), and tools to limit or discourage use at times when digital technology might interfere with other activities (such as during school or after bedtime) should be built into platforms and applications. In addition, digital technology software and product designers should bear greater responsibility to incorporate these features. Companies should be held accountable for making sure that their products benefit young adolescents and promote their development and well-being.

Default settings also offer opportunities to promote early adolescent well-being. Default settings should balance positive development with business priorities, data gathering, and other goals meant to maximize profit margins. Specifically, these settings should protect the privacy of young users. For example, default profiles could be set to private and not allow sharing of any data collected from non-adult users. In addition, digital technology applications could have settings that promote better sleep (for example, do-not-disturb or minimization of blue light at certain times of day) given that interference with sleep is one of the key ways that digital technology may contribute to poor mental health in young people.[21,22] Default settings could also include auto-shutoff features that further promote health, safety, and well-being (such as shutoff features on non-academic platforms during class time). These protections should all be automatic unless youth and their parents elect to change their default settings.

In tandem, youth and their parents should be given more transparent information to make choices and personalize their default settings. They should be given the tools to elect features that will benefit their particular needs and to opt out of features that provide no benefit or carry too much risk of harm. Not every individual's calculation of benefit and risk will be the same. Improving transparency and education for young adolescents will empower each of them to personalize their own digital technology platforms in ways that promote wellness based on their personal needs, vulnerabilities, and circumstances.

BENEFITS OF DIGITAL TECHNOLOGY SHOULD OUTWEIGH RISKS

An important aspect of promoting positive development and well-being in early adolescence is ensuring that the benefits of using digital technology outweigh the risks associated with such use. As we amplify adolescents' opportunities to reap benefits from digital technology, we may also amplify risks. It is also likely that the threshold for risk is lower for some adolescents, for example, those with existing mental health problems, those who are more sensitive to social appraisal and rejection, and those who may be already struggling with body image issues.[23] Many challenges associated with the transition to adolescence may place certain individuals at greater risk for negative consequences of digital technology use. For young adolescents, additional supports and increased communication with trusted adults and mentors may be required to protect against interactions with digital technology that may amplify risk.[24]

We ask that digital technology companies incorporate explicit practices to ensure that the benefits of digital technology for positive development outweigh any potential risk of harm. For example, designs should include opportunities for youth to practice making decisions and taking positive risks in ways that allow learning and growth (such as through opportunities to reach out to peers in diverse online communities or to add their voice to a cause) while keeping the consequences for poor choices manageable (for example, through limitations on data storage and other measures to promote the Right to be Forgotten—see more discussion in *Rights of Children in Digital Spaces; Recommendation 2*). Developmental science can inform which aspects of digital technology are likely to promote core aspects of positive development and provide benefits to youth that are worth any associated risks as they transition to adolescence.

Developmentally Appropriate Designs

Many social media, online gaming, and other digital technology platforms that are heavily used by children and young adolescents in educational and other learning spaces have taken important steps to ensure that their applications are developmentally appropriate. Excellent platforms already exist that use age-appropriate designs and take explicit measures to protect data and limit harm (for example, Duolingo and Minecraft, which are moderated by facilitators trained in social and emotional learning; see further discussion from the UC Irvine Department of Informatics). Unfortunately, this strategy of building features specifically with young users in mind is not common across the broader digital ecosystem. Instead, many digital technology designers of apps, social media platforms, and communication technologies have opted to alter their adult programs in small cosmetic ways to make them more stereotypically child-like. A cartoon bunny or bright colors and animation may be added to the design of a platform promoted for young users, even though the actual features and content are the same as in the standard adult version. Expanding user volume or profits is prioritized above ensuring adequate protections for young users, including the protection of their data, scanning for and blocking exposure to age-inappropriate content, and restricting the ability of strangers, advertisers, and/or bots to contact them directly. These age-inappropriate designs lack the features that promote healthy development and are also associated with negative consequences for mental health.[16]

YOUTH-CENTERED DIGITAL TECHNOLOGY

We recommend that all digital technology used by early adolescents be intentionally designed with young users' needs and safety in mind. Importantly, determination of whether early adolescents are in fact using a particular platform should be made through independent reporting (such as by their parents or third-party data

sources). It should not be based on the intended users identified by digital technology companies or the ages that users select when they register for access to these platforms. To effectively support youth development, it is crucial that we accurately identify which digital technology platforms young adolescents are actually using so that these platforms can be appropriately designed with these users in mind.

Youth experts should advise on the creation of digital technology programs used by youth early on in the design process. The majority of digital technology platforms designed for adults are, at a minimum, lacking features that promote positive youth development. In many cases, they are completely inappropriate for youth consumption given current standards (or lack thereof) for consent, privacy, and targeted advertising. Experts in developmental science (researchers), experts that serve youth (including teachers, school counselors, and therapists), and experts in youth digital product design can provide critical insight into the creation of youth-centered digital programs and platforms.[25]

We also know that simply creating a "kid version" of a platform does not always work as intended (for example, YouTube Kids, Facebook Messenger, and Meta's latest attempt to develop an Instagram for kids). When a new version of the platform with more restrictions and protections is made available, the majority of children and young adolescents remain on the main platform. Creating the new version does not prevent or deter young adolescents from accessing the original adult-oriented version. In addition, the target age ranges of youth-specific platforms may be broad and not developmentally responsive to the needs of young adolescents. Content moderation (both automated and human) needs to be implemented with an intentional focus on the developmental needs of young users, as well as accuracy (including screening for fake news), and safety (including limiting violent and sexually explicit content). Youth-specific platforms can offer positive opportunities, but these potential benefits do not negate the need to improve all platforms (including those intended for adults) as long as young adolescents continue to use them.

YOUTH INVOLVEMENT IN DIGITAL TECHNOLOGY DESIGN

Young users should be actively involved in the design of digital technology features. Digital technology companies should make explicit efforts to understand how youth are using their platforms.[26] When companies create new youth-focused platforms and/or redesign existing applications for younger users, youth should be actively engaged early on in the design process. Youth should be given a voice in usability, entertainment value, desired features, advertisements, and protections for publicly shared content. They should also be given clear information about privacy and data sharing, with choices to opt out that are easy to understand and not hidden in the "terms and conditions" fine print that few people (even adults) read. It may be especially worthwhile in the design process to consider including young adolescents who are using platforms for more mature users despite being underage, to help inform development of more appealing platforms for young users (as well as to glean insights on how to strengthen age-verification strategies).

PARENT INVOLVEMENT IN DIGITAL TECHNOLOGY DESIGN

Parents should be involved in the design of digital technology alongside their children. Parents have valuable insights about which features promote wellness and positive development and which features limit exposure to harmful content. These insights should be used to make designs more age-appropriate, more beneficial, and more entertaining for young users. In some cases, parents may even be using the same digital technology platforms as their children—either for their own purposes (such as networking, socializing, or entertainment) or alongside their children (see discussions of intergenerational tools built into social media platforms in the references[27,28,29,30]).

Parents should also have more opportunities to give consent for their children's digital technology use. Consent related to participation, privacy, data sharing, and targeted advertising should be more explicit (see further discussion in *Recommendation 2: Keeping Early Adolescents Safe*). The procedures for acquiring consent should be based on input received from parents as part of the design process.

Parents should be empowered to share their ideas and concerns with digital technology companies. Parents are currently an untapped resource who could help provide information to make online spaces better and safer for young people. As parents are included more in digital technology design processes, they will likely feel more empowered and even become advocates for their children's continued participation in new and evolving digital technology platforms that promote positive development.

DEVELOPMENTAL EXPERT INVOLVEMENT IN DIGITAL TECHNOLOGY DESIGN

Scientists who study adolescent development and interventions should be consulted in the design and delivery of digital technology targeting young adolescents. Platforms that target or are used by significant numbers of young adolescents should make their data more easily accessible to independent scientists who can evaluate findings and draw informed conclusions relevant to healthy development. Incentives could be offered to companies who partner with independent experts and make their products developmentally compliant (such as through a rating or "gold star" system of approval). Regulatory systems could also be enacted that impose penalties or fines for non-compliance with agreed upon requirements.

RECOMMENDATION 2: KEEPING EARLY ADOLESCENTS SAFE

Digital technology should have design and use requirements that make it safe for early adolescents. Social media and other digital platforms that are used by large numbers of children and young adolescents should incorporate explicit measures to acknowledge and support these users. Policymakers should introduce regulation and oversight to minimize harm.

We recommend that digital technology be regulated in ways that reduce long-term negative consequences and other risks of harm. Below we discuss recommendations that would add significant protection for young adolescent users and be feasible to implement into new and existing digital technology platforms.

Specifically, we recommend:

1. Policies regarding the collection and use of personal data from social media and other digital platforms should be transparent to early adolescent users of digital technology and their parents and should require their consent. Digital technology companies should perform ongoing safety monitoring and use young adolescent users' data to refine features of their platforms to better promote healthy development and well-being and remove features and content that are harmful.
2. Targeted advertising should not be allowed for users below a certain age. Other models that allow digital technology companies to sustain profitable business models should be considered.
3. Digital technology features that pose known risks for long-term consequences should be highly regulated for users below a certain age, and accurate age verification methods should be enforced.
4. Both digital technology companies and young adolescent users of digital technology should have opportunities to receive training on how to ensure that online spaces for early adolescents are safe.

Rights of Children in Digital Spaces

There is wide consensus that children should have fundamental rights that are protected at all ages up to age 18. The United Nations Convention on Rights of the Child—the most widely ratified human rights treaty in history—guarantees that children under the age of 18 have specific rights. More recently, other organizations have applied these rights to the digital age. Groups like the 5 Rights Foundation and the European Union's Right to be Forgotten protect the rights of young online users and seek to limit harm and permanent consequences of digital technology use. The IEEE 2089-2021 is the first in a set of standards based on the 5 Rights Foundation's principles for children and establishes a framework for developing age-appropriate digital services for non-adult users. For example, these standards help companies ensure that their digital designs are developmentally appropriate, provide adequate protections for data collected from minors, and practice social responsibility during product development.

Currently, the United States has very few regulations or limitations to protect children's and adolescents' rights regarding digital technology use; the federal laws that do exist are outdated and undergoing revision. Long-lasting and harmful consequences can occur when information is shared online and can never be removed. This is not a responsibility that children and young adolescents should shoulder alone without rules, support, or guidance. Their rights should be protected in all aspects of their development, including their development in online spaces.

NOTE: *In September 2022, California passed the California Age-Appropriate Design Code Act (see the California State Assembly bill and youth voices about the act). This new law, which will take effect in July 2024, will require digital technology companies to protect young users' privacy and personal data, limit dangerous content, and maintain default settings that prioritize safety. This law is the first of its kind in the United States, and it serves as a promising first step toward protecting young users in online spaces.*

Requirements Related to Data Sharing and Oversight

COLLECTION AND SHARING OF DATA FROM YOUNG USERS

Research has shown that specific forms of data sharing have the potential to greatly benefit youth (see a recent open letter to Meta from youth development experts highlighting specific types of data sharing that promote youth safety and positive development). Not all data sharing is harmful, and young adolescents and their parents should have the option to share their data easily and conveniently with researchers if they choose to do so. Transparency about the uses of such data should be provided to youth and their parents prior to opting in.

In addition to facilitating positive data sharing, digital technology companies should responsibly share de-identified data with relevant third-party experts in order to monitor risk and identify potential areas of harm. Areas of potential harm might include design features that are known to carry some risk but that are showing evidence of causing more harm than expected, as well as features that were previously thought to be benign but that show new evidence of potential harm. In general, all digital technology platforms that collect personal information from young users should be required to use this data in ways that benefit youth while also keeping them safe.

SAFETY MONITORING AND OVERSIGHT

Companies should take reasonable measures to continuously monitor safety in ways that:

- make it easy for parents and young adolescents to report harmful experiences, including harassment, bullying, and exposure to age-inappropriate content; and
- incorporate oversight by independent experts in developmental science

Digital technology platforms should make it easy for youth (or their parents, teachers, or other adults) to do their own safety reporting in an ongoing fashion. Child-friendly mechanisms should be put in place through which youth can report inappropriate or threatening online interactions, and these mechanisms should be easy to use and access by young adolescents. Companies should also conduct their own safety monitoring and develop standard practices for internal reporting when employees or other company associates become aware of harmful or inappropriate use of their platforms. Such processes have precedent, such as in the FDA mandated, continuous adverse event monitoring conducted by pharmaceutical companies for all drugs even after they are FDA approved.

Any features flagged as high-risk for harm through these various oversight measures (including online harassment and other unambiguously harmful transgressions) should be reviewed by third-party experts on mental health or other credentialled groups who can work with digital technology companies to offer recommendations and create solutions that minimize future risk of harm. Findings, recommendations, and actions taken as a result of these investigations should be made available in easy-to-consume ways to all young users and their parents.

Moving forward, these types of event monitoring, review, and mitigation practices may reveal unexpected benefits of specific digital technology applications and features. Safety monitoring

YOUTH PERSPECTIVES

Many of the youth who provided feedback on this report were not aware that their data was being collected as they interacted online. Some who did know did not believe that the data included personal information, and many did not believe that they had any choice about it. We asked them, **"Did you know that companies that build games or social media apps collect data about you when you play or use them?"** Here is what they told us:

> ***"I didn't know that. I think it is not the best thing. I DO NOT want them selling my data online but it is okay for advertising – like, here is a new game we think you would like."***
>
> **— 13-YEAR-OLD**

> ***"To an extent it is good (like helping find new things) but sometimes it's too much."***
>
> **— 14-YEAR-OLD**

> ***"No way around it, you either can agree and play or not be able to play any games."***
>
> **— 14-YEAR-OLD**

> ***"Did not know that. For social media I don't think it's great, but for video games I think it's fine for skill matchmaking."***
>
> **— 12-YEAR-OLD**

> ***"I feel okay with it, but I really like when the game asks me if I feel okay with that, because that lets me know that other kids, if they aren't okay with it, then they can say no (such as giving apps access to data while you are on the app only, or always). I feel it's okay because they don't get any personal data (full name, address, gender)."***
>
> **— 11-YEAR-OLD**

> ***"Yes, I knew that. So I don't give them my name or my age."***
>
> **— 10-YEAR-OLD**

How data collection works and the potential benefits and risks of data sharing should be made more explicitly available to young users and their parents. Options to opt in or out should be clearly presented and straightforward to implement.

does not need to act exclusively as a way to "keep digital technology companies in line." Third-party data analysis and oversight may illuminate previously unidentified benefits to young adolescents from the use of digital technology (just as a pharmaceutical drug may prove to be safer over time after there is a longer history of safety data available). While digital technology oversight may help reduce harm as its primary objective, it also has the potential to highlight positive aspects of technology use and yield benefits for digital technology companies and the young adolescents that use their platforms.

Limitations on Targeted Advertising

Targeted advertising should be limited for users below a certain age. Other models for digital technology companies to sustain profitable business models should be considered. For example, fee-based revenue models like subscriptions or premium packages encourage membership and use over time and do not require collection of young users' personal information. We acknowledge that changing the current standard of free access may be challenging, but other popular media products with accessible price points (for example, Disney+) have demonstrated that attaining a high user volume is possible even with ongoing costs of participation.

Such new revenue models would help avoid targeted advertising that intentionally aims to sell dangerous products to children and young adolescents (for example, vaping advertisements on social media platforms intentionally target young users[31]). Social media and other free-access platforms could take an important first step toward alternate revenue streams by banning ads that are especially dangerous and unhealthy for young users. Continued use of other age-appropriate advertising could then help sustain revenue streams while alternate profit models are explored.

Age Minimums for Digital Technology

CERTAIN DIGITAL TECHNOLOGY PLATFORMS SHOULD HAVE LIMITED ACCESS BASED ON AGE

Digital technology features that pose known risks for long-term consequences (including public sharing and storing of private data) should be highly regulated for early adolescent users. Some features should not be allowed without explicit consent from youth and their parents, and some features should simply not be available at all to users below a certain age. While we concede that verifying age and identifying appropriate ages for specific platforms is complex, in some cases it is the best method available to limit the consequences of digital technology use for children and young adolescents.

The degree to which companies can store or use adolescent users' data for any purpose should be limited, consensual, and transparent for users below a certain age. Stricter age limits should be set as the default for all digital technology platforms. Companies meeting specific safety criteria could be given the privilege of having their age limits relaxed (for example, if they pass established "healthy" standards and prove that the risks associated with their products are age-appropriate), or even lifted completely (for example, if their products are certified as "safe for everyone"). This concept is similar to the rating system that is already used for movies and video games, and it should be consistently applied to all digital platforms that are heavily used by children and young adolescents. As adults, it is our responsibility to determine what is safe and limit the mistakes that young adolescents can make—particularly those with serious and/or permanent consequences.

VERIFYING THE AGE OF DIGITAL TECHNOLOGY USERS

Verifying the age of digital technology users is a complex, ongoing issue. If age verification is mandated, then what level of verification should be acceptable? Who should be able to do what at what age? How should age requirements be enforced while also protecting users' privacy?

Developmental scientists and other youth experts are ready and willing to advise on the specifics of what is appropriate for children versus pre-teens versus older teens. Digital technology companies should incorporate age-appropriate guidelines and ensure that they are enforced.

Some developers have attempted to exclude young adolescents from their platforms and, in turn, avoid compliance with the added protections that are required for children. For example, Facebook initially required a ".edu" email address to register because it was designed specifically for college students. Limitations of this kind are clearly possible (as Facebook demonstrated). But growing user volume typically wins out in the end (the .edu requirement was short-lived, and Facebook's user base exploded after this requirement was lifted).

Nowadays, it is most common for social media companies to theoretically restrict the use of their platform below a certain age. Companies try to avoid some accountability by focusing on platforms for older users, even while data shows that early adolescents are using these platforms in high numbers. Many platforms require age verification to register (such as a minimum age of 13). But this method allows children of any age to simply select the birth year that will gain them entry. Other methods of age verification that are more difficult to bypass can also be problematic with regard to equity (See discussion under *Recommendation 4: Ensuring Equitable Access*).

Until this challenge is solved, early adolescents will continue to use platforms designed for adults. This places them at particularly high risk of using digital technology in ways that are unsupervised, developmentally inappropriate, and potentially harmful. We concede that age verification requirements are not an easy problem for companies to solve. But it is critical that age verification or approximation procedures and algorithms be developed so that data protections and exposure to online content and safeguards can be tailored for young users.

> *"For most social media apps I think the age restriction should be stricter/more enforced."*
>
> **— 12-YEAR-OLD**

> *"The age restrictions are useless, anyone who wants to bypass it can but I agree with the idea. If they are going to have them they should do something to actually make them work."*
>
> **— 14-YEAR-OLD**

Given the timing of smartphone acquisition, increases in time spent online, and lack of acknowledgement of young users by digital technology companies, we believe that the period from 10- to 13-years-old is the most critical developmental period during which digital technology companies should be required to verify age. Digital technology companies have found successful ways of verifying age in the past (such as Facebook's original .edu access requirement), and some governments are doing this at a federal level (for example, the UK's Online Safety Bill). This is a manageable challenge and now is the time to address it.

Training Tools for Digital Technology Companies and Young Users

Digital technology companies that provide platforms for early adolescents should have standardized guidelines to help them develop products that are beneficial and safe for young users. Digital technology companies should also

incorporate specific skill-building opportunities for young users into their product designs. These tools for both digital technology developers and young users should incorporate input from experts on early adolescent development.

STANDARDIZED GUIDES OUTLINING RECOMMENDATIONS AND REQUIREMENTS

In order to further maximize benefits and limit harm, experts in developmental science and other stakeholders (for example, researchers, policymakers, parents, and youth) should create standardized, evidence-based guidelines for digital technology use. These guidelines should provide clear recommendations for how digital technology companies can promote positive development and keep young adolescents safe. In addition, existing guides that describe established standards for children's and adolescents' rights should be treated as exemplars and incorporated into the development of any new guidelines (see *Rights of Children in Digital Spaces*). All digital technology platforms frequented by early adolescent users should be required to adhere to these guidelines. Standardized guidelines would also act as an important resource that digital technology companies could turn to when trying to establish a positive and safe online space for their younger users.

SKILL-BUILDING OPPORTUNITIES FOR YOUNG DIGITAL TECHNOLOGY USERS

A standardized training and skill-building process should be incorporated into current and new digital technology platforms to help enhance benefits and limit harm to young users. Youth should have opportunities to learn skills that make them informed consumers of online content and gain greater access to certain platform features upon completion of this training. This would help ensure that young people are aware of the potential risks of digital technology use and are able to make educated decisions about how to use digital technology platforms in ways that protect their personal safety, data, and privacy. Young users who master skills for safe consumption of online content should earn greater flexibility of use and more diverse opportunities for learning and exploration that grant them more chances to take positive risks.

A PLACE FOR UPPER AGE LIMITS?

Improved systems of age verification could also ensure developmentally appropriate online spaces by implementing upper age limits in addition to age minimums. If a social media space is designed specifically for younger adolescents to engage in positive peer interactions, then perhaps adults should not be a part of those interactions (with possible allowances for supervisory involvement by parents of young users, depending on the platform). Age verification can work both by protecting young users from content or social interactions meant for adults and by protecting them from adults who may be inappropriately inserting themselves into young adolescents' peer interactions.

> ***"To make it feel safer, if you are over the age of 20 you shouldn't be able to play some certain games that are made for kids and teenagers (games like Roblox)."***
>
> **— 13-YEAR-OLD**

RECOMMENDATION 3: EVIDENCE-BASED DESIGN AND REGULATION

Digital technology used by young adolescents should incorporate and advance the best available research as part of its design and evaluation process. Digital technology companies and policymakers should require independent evaluation by experts in developmental science, mental health, and other relevant areas for any digital technology platforms that may carry real health concerns for young adolescents. Additional funding for research, communication of best practices for supporting youth in online spaces, and collaboration with parents, youth, educators, clinicians, and youth-serving organizations will allow us to harness the power of digital technology to reach young people, while also ensuring they remain safe.

Digital technology product development should incorporate research findings related to what promotes and harms development during early adolescence. Ongoing independent research should be incorporated into design now and moving forward to keep research findings, recommendations, and regulations up to date. Over time, we can continue to ensure that online spaces promote positive development, wellness, and safety in early adolescence as digital technology evolves.

Specifically, we recommend:

1. Digital technology companies should rely on research on early adolescent development and resulting expert recommendations and regulations to improve their products and ensure that they promote positive development and limit harm during early adolescence.
2. An evidence-based approach should be required moving forward so that researchers and digital technology companies continue to analyze and evaluate information regarding the online use and experiences of early adolescents to maintain a current understanding of what will produce positive change as digital technology evolves over time.

Digital Technology Development Should Incorporate Research Findings

Digital technology companies should use research-driven designs and consider recommendations made by experts on early adolescent development. Some companies have already taken positive steps to protect young users and make evidence-based resources for well-being more accessible. For example, YouTube has initiated an algorithm that applies an age rating to all content as well as supervised accounts for younger users. Similarly, Snapchat now provides suicide prevention information as part of their website support and provides a 24-hour crisis line and in-app, expert-based support when users search for mental health topics (such as those related to depression, anxiety, grieving, bullying, and body image). Digital technology companies could also share data that they collect from young users (through transparent and consensual means) with researchers to help them refine their recommendations for young users. Using research-driven designs and collecting data to help inform these designs will allow digital technology companies to improve their products and ensure that they promote healthy development during early adolescence.

An Evidence-Based Approach Moving Forward

The growing body of evidence related to early adolescent use of digital technology will allow researchers and digital technology companies to make educated decisions moving forward.

They will be able to determine whether the changes and regulations implemented in accordance with developmental science actually prove effective at producing positive change. Over time, some data may confirm assumptions that we currently hold about digital technology use in early adolescence. Other evidence might disprove or refine current understanding and reveal unexpected benefits and risks over time. Based on this growing understanding, we can fine-tune recommendations so that digital technology companies can continue to promote youth wellness as their products evolve.

We are eager to learn from the data and see how the specific recommendations that we make in this report impact well-being and safety among young adolescent users of digital technology. We are also eager to continue identifying new ways to improve future digital technology platforms and ensure that they promote well-being, learning, healthy risk taking, exploration, and of course entertainment and fun, within a regulated and safe environment. With an evidence-based approach to digital technology moving forward, we will be able to learn more about what will help young people thrive in ever-evolving digital technology spaces.

RECOMMENDATION 4: ENSURING EQUITABLE ACCESS

All young adolescents should have reliable access to the level of digital connectivity and devices required to fully participate in their education and learning. Digital technology companies should center equity, accessibility, and inclusion when designing products for youth so that young people from a diverse range of communities can benefit from online opportunities to explore, discover, learn, and connect with peers.

It is time for digital technology companies to prioritize equitable access for young users. We acknowledge that this will be challenging, and we consider specific ways that new and existing digital technology platforms can prioritize equitable access in their product design, safety monitoring, and revenue streams.

Specifically, we recommend:

1. Digital technology companies should acknowledge inequities in access to devices, reliable internet, information about safe use of digital products, and other online resources. They should take proactive steps to make their products accessible to all young users who may benefit from their online spaces.
2. When considering profit models that do not rely on targeted advertising, digital technology companies should consider ways to overcome access inequities that may arise from fee-based or subscription models.
3. Digital technology companies should develop age requirement algorithms that are inclusive and not reliant on exclusionary requirements like birth certificates or provision of parents' personal information.

Equitable Access to Digital Technology

Access to digital technology differentiates young adolescents in terms of their exposure to potential benefits and harm. Although most adolescents are socializing, exploring, learning, and spending time in an online world, digital technology use and its impacts may be meaningfully different for young people with varying levels of access. Accessibility of devices, data plans, internet, and guidance about how to use digital technology differs for youth from different demographic groups. Some young adolescents benefit from inclusionary measures like image and video captioning that are not typically built into the platforms that they use. Links between digital technology use and well-being also vary across youth (for example, early adolescents who are economically disadvantaged spend more time online and show stronger links between social media use and poor psychological well-being[32]). Digital technology companies should acknowledge these differences and prioritize equitable access to diverse users in their product designs, advertising, and online content.

ENSURING EQUITABLE ACCESS TO FEE-BASED DIGITAL TECHNOLOGY

When considering alternative profit models for digital technology platforms (for example, subscriptions instead of targeted advertising), it is crucial to consider access and inclusivity. Digital technology use can benefit young adolescents and promote well-being in many ways (as discussed as part of *Recommendation 1: Scaffolding Healthy Development and Promoting Wellness*). Therefore, any change to digital technology use that excludes large groups of youth from online spaces should be considered with caution. If young adolescents

(or more likely, their parents) have to pay for digital technology use, we must consider how to ensure equity of access. Perhaps more importantly, we must ensure that inequitable access does not result in targeted advertisers focusing specifically on low-income youth who cannot afford digital technology subscriptions or premiums. We acknowledge that further consideration of this issue is warranted prior to widespread implementation of fee-based revenue models.

EQUITABLE AGE VERIFICATION

Age verification requirements are notoriously challenging to implement. Self-reported birthdates are easy to bypass, and those that rely on more onerous forms of verification (for example, parental verification via banking information or birth certificates) can be exclusionary. Parents may not wish to share their identity or may not have access to bank accounts or other information required by more complex age verification algorithms.

While it is not an easy problem for companies to solve, it is critical that age verification procedures be developed in ways that prioritize equity. This will ensure that all early adolescents spend their time on platforms designed for them—not for adults—and have equitable access to the positive opportunities that age-appropriate digital technology offers.

Promoting Equitable Access

Acknowledging the inequities that exist in access to digital technology is a crucial step in reducing the impact that these inequities have on young people. All young adolescents can benefit from the positive opportunities available in age-appropriate online spaces. Ensuring that all young adolescents have these opportunities should be an essential goal of digital technology companies, and equitable access should be a key consideration in the design of all new and existing digital products.

CONCLUSION

As children transition into adolescence, they increasingly spend their time in digital spaces. They start to move more frequently between safe and age-appropriate physical spaces like pools, parks, camps, and classrooms and largely unregulated digital spaces like social media, online videos and games, and online public forums. We must ensure that the digital spaces that we create for young people support early adolescent learning, discovery, exploration, and entertainment in positive ways that limit potential harm just like the physical spaces where they spend their time. By implementing the recommendations set forth in this report, we can design and regulate the digital technology used by young people in ways that support their healthy development and help them thrive as they make the transition from childhood into early adolescence and the larger digital world.

Benefits to Youth, Parents, Digital Technology Companies, and Society

As the recommendations in this report are incorporated, we expect to see benefits for youth, parents, digital technology companies, and society.

BENEFITS TO EARLY ADOLESCENTS

Early adolescents would have more access and freedom within developmentally appropriate digital technology platforms, which would allow them to have fun, explore, engage with like-minded peers, and take healthy risks with manageable consequences. They would have a stronger voice and be viewed as important stakeholders in the development and design of the digital technology that they are using.

BENEFITS TO PARENTS

Parents would have support to help ensure that their children's online activity is safe. It can be difficult for parents to exert control over their young adolescent's digital technology use if they do not simply say "no" to screen time. New regulations dictating standards for digital technology companies would enable parents to feel more confident about their children's digital technology use. Ongoing data collection and transparency would allow them to learn about emerging findings related to their children's use of digital technology and make educated decisions to help their children thrive as they transition to adolescence and to more time spent in online spaces.

BENEFITS TO DIGITAL TECHNOLOGY COMPANIES

Digital technology companies would develop longer-lasting, more sustainable business models where more is known about how their products help and support youth. They would have more control and accountability to prevent unintended harm, which would allow them over time to avoid punitive measures that impact long-term profits. The use of new revenue models (such as subscriptions) would give companies more control over their content and bring their goals in greater alignment with those of their customers.

BENEFITS TO SOCIETY

Society as a whole needs future generations that are healthy, productive, and technologically fluent. The US is currently grappling with rising rates of youth anxiety, depression, and suicidality exacerbated by the pandemic and its related restrictions. We are also facing a future filled with uncertainties due to climate change, rising income inequality, uneven access to reproductive healthcare, and growing global unrest. We need to raise young people who can access information about these issues, form connections with others without physical limitations based on their location or health-based restrictions, and participate in causes and activism within larger communities. Helping young adolescents become educated consumers of digital technology will give them access to larger, more diverse communities and help ensure that they are technologically adept, solution-focused, and ready to face these future challenges.

Summary of Recommendations in this Report

1. **Digital technology should scaffold healthy development and promote wellness. Digital platforms can and should promote positive growth for young adolescents by scaffolding healthy learning, entertainment, and emotional, social, physical, and sexual development.**
    - Digital technology should be explicitly designed to enhance core aspects of positive early adolescent development, maximize wellness, and ensure that the benefits of using digital platforms outweigh the risks.
    - Designs should be developmentally appropriate and youth-centered. They should not be "kid versions" of applications and platforms that were originally designed and intended for adult use. Youth, parents, and experts in early adolescent development should all be actively involved in the design of digital platforms for young people.
2. **Digital technology should have design and use requirements that make it safe for early adolescents. Social media and other digital platforms that are used by large numbers of children and young adolescents should incorporate explicit measures to acknowledge and support these users. Policymakers should introduce regulation and oversight to minimize harm.**
    - Policies regarding the collection and use of personal data from social media and other digital platforms should be transparent to early adolescent users of digital technology and their parents and should require their consent. Digital technology companies should perform ongoing safety monitoring and use young adolescent users' data to refine features of their platforms to better promote healthy development and well-being and remove features and content that are harmful.
    - Targeted advertising should not be allowed for users below a certain age. Other models that allow digital technology companies to sustain profitable business models should be considered.
    - Digital technology features that pose known risks for long-term consequences should be highly regulated for users below a certain age, and accurate age verification methods should be enforced.
    - Both digital technology companies and young adolescent users of digital technology should have opportunities to receive training on how to ensure that online spaces for early adolescents are safe.

3. **Digital technology used by young adolescents should incorporate and advance the best available research as part of its design and evaluation process.** Digital technology companies and policymakers should require independent evaluation by experts in developmental science, mental health, and other relevant areas for any digital technology platforms that may carry real health concerns for young adolescents. Additional funding for research, communication of best practices for supporting youth in online spaces, and collaboration with parents, youth, educators, clinicians, and youth-serving organizations will allow us to harness the power of digital technology to reach young people, while also ensuring they remain safe.
    - Digital technology companies should rely on research into early adolescent development and resulting expert recommendations and regulations to improve their products and ensure that they promote positive development and limit harm during early adolescence.
    - An evidence-based approach should be required moving forward so that researchers and digital technology companies continue to analyze and evaluate information regarding the online use and experiences of early adolescents to maintain a current understanding of what will produce positive change as digital technology evolves over time.
4. **All young adolescents should have reliable access to the level of digital connectivity and devices required to fully participate in their education and learning.** Digital technology companies should center equity, accessibility, and inclusion when designing products for youth so that young people from a diverse range of communities can benefit from online opportunities to explore, discover, learn, and connect with peers.
    - Digital technology companies should acknowledge inequities in access to devices, reliable internet, information about safe use of digital products, and other online resources. They should take proactive steps to make their products accessible to all young users who may benefit from their online spaces.
    - When considering profit models that do not rely on targeted advertising, digital technology companies should consider ways to overcome access inequities that may arise from fee-based or subscription models.
    - Digital technology companies should develop age requirement algorithms that are inclusive and not reliant on exclusionary requirements like birth certificates or provision of parents' personal information.

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